



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,440	12/28/2000	Suk-Won Choi	8733.373.00	6061
30827	7590	08/23/2005	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP			DUONG, THOI V	
1900 K STREET, NW			ART UNIT	
WASHINGTON, DC 20006			PAPER NUMBER	
			2871	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/749,440

Applicant(s)

CHOI ET AL.

Examiner

Thoi V. Duong

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-18 and 20-25 ~~is/are~~ pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-18 and 20-25 ~~is/are~~ rejected.
- 7) ☒ Claim(s) 2 and 14 ~~is/are~~ objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0505.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the request for reconsideration filed August 04, 2005.

Currently, claims 1-10, 12-18 and 20-25 are pending in this application.

Response to Arguments

2. Applicant's arguments filed August 04, 2005, with respect to claims 1, 10 and 18 have been fully considered and are persuasive. The final rejection of the last office action has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of Kitayama et al. (USPN 5,583,682).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4-6, 10, 12, 13, 16-18 and 20-22 were rejected under 35 U.S.C. 102(b) as being anticipated by Kitayama et al. (Kitayama, USPN 5,583,682).

Re claims 1 and 10, as shown in Fig. 1, Kitayama discloses a method of fabricating a liquid crystal display device, comprising:

forming a liquid crystal panel including first and second substrates 11a and 11b;

forming a ferroelectric liquid crystal layer 15 comprised of liquid crystal molecules between the first and second substrates of the liquid crystal panel (col. 5, lines 3-14 and col. 6, lines 18-23);

Art Unit: 2871

cooling the liquid crystal panel to a predetermined temperature (-30 degrees C) so as to produce monostable alignment within the ferroelectric liquid crystal (col. 12, Table 1); and

heating the cooled liquid crystal panel substantially to room temperature (30 degrees C) (col. 9, lines 30-42 and col. 10, lines 40-41).

Re claim 18, the method of Kitayama further comprises passing light I0 through said liquid crystal panel as shown in Fig. 1.

Re claims 4 and 16, the cooling produces a chiral smectic C phase in the ferroelectric liquid crystal (col. 9, lines 30-42).

Re claims 5 and 17, cooling produces a chiral smectic CA phase in the ferroelectric liquid crystal (col. 9, lines 30-42).

Re claim 6, the first substrate 11a includes a transparent material (glass) (col. 4, lines 54-59).

Re claims 12, 20 and 22, the predetermined temperature -30 degrees C is below the smectic phase temperature -8.7 degrees C (col. 5, lines 54-59 and col. 12, Table 1).

Re claims 13 and 21, the liquid crystal layer is subsequent heated above the smectic phase temperature (col. 12, lines 15-16).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 7-9, 15 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitayama et al. (Kitayama, USPN 5,583,682) in view of Applicant's Prior Art (Fig. 1).

Kitayama discloses a method of fabricating a LCD device that is basically the same as that recited in claims 3, 7-9, 15 and 23-25 except that the method does not include steps of forming a pixel electrode, a thin film transistor (TFT), and a color filter, a ferroelectric liquid crystal layer including DOBAMBC, and an anti-ferroelectric liquid crystal.

Applicant's Fig. 1 Prior Art shows a ferroelectric liquid crystal device which comprises a lower substrate 2 having a TFT and a pixel electrode 14, an upper substrate 4 having a common electrode and a color filter, and a ferroelectric liquid crystal layer 10 including DOAMBC to obtain a ferroelectric property at a low temperature below the phase transition temperature of the smectic C phase. Due to a declination of contrast ratio, an anti-ferroelectric liquid crystal is included in the ferroelectric liquid crystal (specification page 6, lines 5-9 and page 8, lines 1-5).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Kitayama with the teaching of Applicant's Prior Art by forming a TFT and a pixel electrode on the lower substrate and a color filter on the upper substrate, and including an anti-ferroelectric liquid crystal for obtaining an active matrix with a color display and a ferroelectric property at a low temperature below the phase transition temperature of the smectic C phase, and further

Art Unit: 2871

improving contrast ratio of the LCD device (specification page 6, lines 5-9 and page 8, lines 1-5).

Allowable Subject Matter

7. Claims 2 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: none of the prior art of record fairly suggests or shows all of the limitations as claimed. Specifically,

Re claims 2 and 14, none of the prior art of record discloses, in combination with other limitations as claimed, a method of fabricating a liquid crystal display device comprising cooling the liquid crystal panel to -20 degrees C so as to produce monostable alignment within the ferroelectric liquid crystal.

The most relevant reference, USPN 5,583,682 to Kitayama et al. (Kitayama), fails to disclose or suggest a predetermined temperature being in a range around -20 degrees C. As shown in Table I (col. 12), Kitayama discloses that monostable alignment within the ferroelectric liquid crystal is produced when cooling the liquid crystal panel to -30 degrees C.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 2871

Conclusion

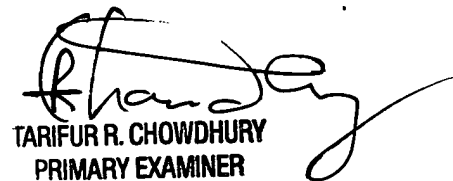
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong



08/11/2005



TARIFUR R. CHOWDHURY
PRIMARY EXAMINER